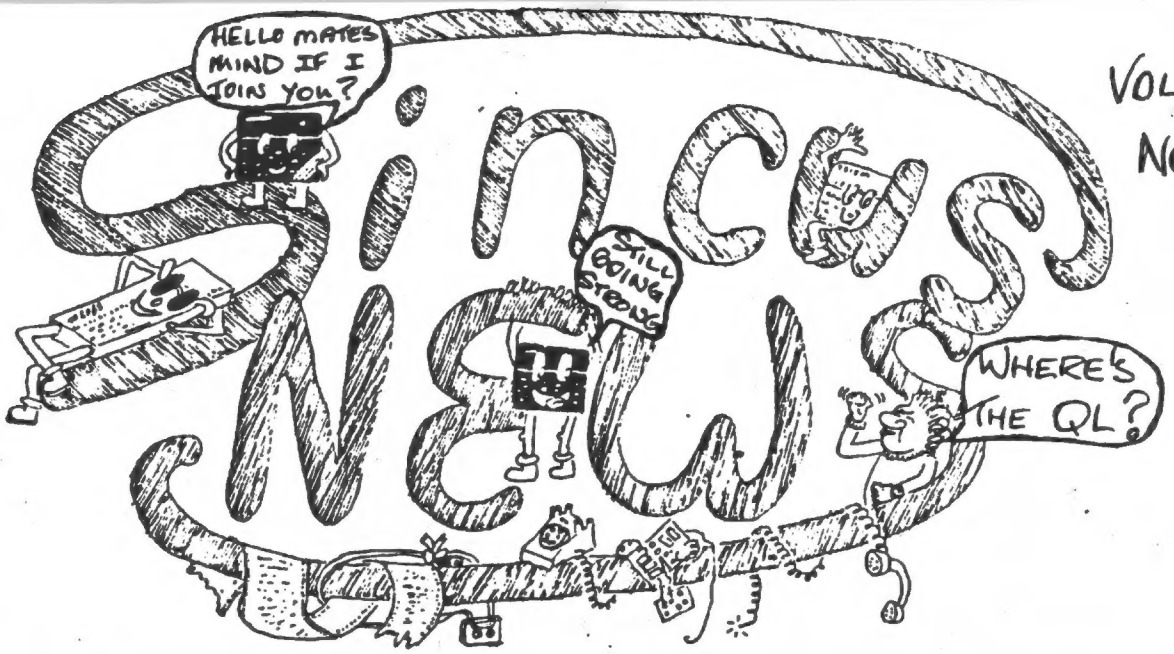
MAY-AUG
1985



VOL. III
NO. 6

TO THE READERSHIP OF SINCUS NEWS:

Well, the May, June, July, August issue of SINCUS NEWS is finally "put to bed". .I have violated one of my cardinal rules "the newsletter shall be mailed promptly". To the membership of SINCUS I apologize-I just got swamped in my new job.

The positive side is that more people are getting involved in the production of the newsletter, so that makes getting it out an easier task. For those of you who have wondered if SINCUS had disappeared, be assured we have not. We have held meetings in May, June, and July. We have returned to the popular meeting site the Vestal Public Library for the remainder of 1985 and I do hope thereafter.

The problem has been quite simple - SINCUS NEWS takes about 20-25 hours per month to produce. Quite happily I handled this alone (in my prior employment). Since I changed jobs April 10, it has simply been impossible to devote more than an hour or two a week to SINCUS. . Paul Hill, Scott Eddy, John Colonna, Carl Morris, and Charley Koeth have all stepped forward to help get this issue out. Dave Schoenwetter and John Sims will be helping get future issues out. A side benefit of this is that we may be able to transfer "Tasword Files" via Smart Term II to other word processors thus facilitating "editing" assistance.

My personal observation, after four months in the computer retail business is that the TIMEX-Sinclair 2068 has some great features and software. Sinclair computing is very much alive and there are many things you can do with these machines. In the months ahead we, in SINCUS meetings, will be stressing the useful and profitable things you can do with your Sinclair compu ter. I hope you will take the two hours a month it takes to come to our meetings. We will schedule other activities, like hardware and programming classes as we find people willing to attend them.

Finally, I apologize for not being able to get the newsletter out. With your support, it will not happen again!!

Sincerely,

Gary

GARY ENNIS
Editor

PS - Really Good Stuff inside!

SECRETARY'S REPORT

A novice (?) writes..."I own a TS2068-there's no local user group in my area. I purchased a VOLKSMODEM VM 1 which came without software. If anyone in your group has the proper software to work this modem I would appreciate a copy- I only need a copy (printed) of the program- I'm enclosing stamps (2) to partially cover the cost of mailing it." ..This from a non-member yet, and no mention of joining even.... If any out there know of any public domain software that will make a TS2068 work a VM1 you can make a friend; I wonder how the writer connected the modem. (contact me for transmitting the program care of SINCUS NEWS-I'll re-emburse you the postage) (REAL programmers must get gray hairs to learn their efforts might be worth a couple 22 cent stamps).

Say goodbye to "Computers and Electronics"- one of the best and only computer mags for a long time, till Ziff-Davis and the same to "Creative Computing" -now YYEACKK!!!

CATS-Bladensburg, MD - their April 1985 issue arrived- has lots a nice 1000 material in it. Their good work is a relection of their interest.

SYNAPSE-State College, PA-their March 85 issue is in, with a 2K word processor for the TS1000 folks! Looks interesting!

C/CATS-Oregon City, OR- their MAY 85 issue just arrived, and a couple of their guys hooked up one of those Radio Shack XY PLOTTER, they were on sale for less than $200 a while back, to their 2068s! And it works. And the printout looks very sharp...

I wrote earlier of the lack of 1000 material, I've seen more for the 1000 lately than the old 2068! TS' Horizons, CATS, SYNAPSE have all carried a great deal on the 1000 lately- if the 1000 is still your main machine get with these fine folks and support them and they'll help you for sure. And the back issues will be full of 1000 material for you new 1000 fans, so also order the back issues too!

? How will the 2050 modems work with the Spectrums/disc drives and microdrives anyone look into that?

Don Barnard of TSS services mentions a possible convention of TS users this summer at Chattanooga, TN and wants feedback for a good date. I've dropped the idea of an Atlantic City meet this summer due to lack of interest. Check with Don at: TSS, POB 14214, Red Bank, TN 37415-0214

2068 LOADing problems? I reversed the wires on the tape recorder plug- I have an old lead from my ZX81, I cut it in the center and seperated the two wires, one is positive and one negative- but your recorder might be play a switcheroo on you- so swap around the wires and try to LOAD again- it worked like a charm- then reSAVE the normal way with a regular set of plugs. This from one of our resident wizards, MES B.

Paul Hill, SINCUS

This from Bob Dyl, Late breaking news-TIMEX-Portugal a independent division from TIMEX USA, is going to be selling t TIMEX 2068 with 3" disc drives for around $400 in North A a little more to follow below!!!

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Got lots more on the Portugal machine- by the time you read this you'll already have heard about the disc drives- but in case you haven't- here is a bunch a news via SINCUS member Ian Robertson, from Canada and the April 1985 issue of "Sinclair User "(British pub) "...disc system for the Spectrum has been launched recently by Timex (Portugal).

It offers the use of up to four drives, each of which can access up to 140K;..It uses 3" drives, and 5 1/4" and 3 1/2" can be also used. ...it uses 2 bytes of Spectrum memory - unused ones in the systems variables; has a very versaile filing system; features two, independant RS232C ports and could in theory run C/PM programs. The hardware is supplied in a number of stackable units. An interface, complete with reset switch, plugs in the back of the Spectrum and is connected via cable the controller at the base of the stack. Onto to that are pl the drives and on top goes the mains power supply. Although the controller can handle four drives the power supply can only handle two, and so with a full complement of drives you will need two power supplies.

Ia who is also a member of the Toronto T-S Users Group writes a column - Syncbits - "There is also a hardware configuration for the TS2068 which converts the rear edge connector and voltages to the Spectrum specifications...will be available when you order a disc drive, but you have to specifiy the type of machine you own....Zebra systems Koala Pad and Tech Draw to transfer patterns or art to computer/printer...also passes on this...Those crazy English have passed a Law which becomes effective July 1, 1985 that outlaws copying software. Naturally everyone seems to be in a panic. If you have noticed several U.K magazines have stopped carrying ads for Tape Copiers...! "

SUM-WARE, 810 Mammot Rd, Alden, NY 14004 send word that they are selling the SILVER AVENGER from Timex Portugal. It has both the Timex and Spectrum ROMS, Spectrum Rear edge connector and runs on its own 110W power supply--intro price $159.95 + 5% S&H and the TIMEX disc drive which will run on the TS2068, Silver Avenger or the Spectrum +, specify which, for proper IF, includes a Hitachi 3.5" drive, controller, cables, power supply and IF for $269.95 + 5% S&H. Send A LSASE for details.

EMC,15 Kilburn Ct, Newport RI 02840, is selling the Timex Portugal 2068 for $159.95, and disc drive for $239.95 PLUS $125 for second drive, write for details.

Computer Dome, Oakdale Mall, Johnson City, NY has ordered a TIMEX 2068 and Hitachi drive-expected by the end of the month-and will try to carry the machine and Spectrum Software at the Discount Computer Outlet, Small Mall Harry L Dr. Johnson City, New York (ED note-it is NOT 3 1/2 inch drive and FCC approval is expected soon, but it is not yet legal to sell in the United States)

SUM writes of the Portugal machine (Silver Avenger) , which ll be called the Timex 2068 as opposed to the older TS 2068 - see a little confusion growing in your mind already.

1. ZX-80 ---1980
2. ZX-81 ----1981
3. TS1000 ----1982
4. Spectrum --1982
5. TS 1500 ---=1983
6. T/S2068 -----1983
7. Quantum Leap--198s
8. Spectrum PLUS ---1984 a guess, a Spectrum in a QL case.
9. T/S 2068/Spectrum ROM or Emulator---1984
10 .TIMEX (Portugal) 2068 (Silver Avenger) with both ROMS and Spectrum rear edge and cartridge port and joystick port and sound and a new Spectrum cartridge port and different power supply ------late 1984 or early 198u

-Also the microdrives with IF can now fit Spectrum Plus, or a TS2068 with Spectrum ROM or Emulator with the Microdrive ADAPTOR which EMC sells for $35.

-And there are Wafadrives, $229.95, two drives, a RS232 port and a centronics port in one unit need an Omni/Emu cartrider in our TS2068 to run this, details write DAMCO Enterprises, 67 Bradley Ct. Fall River, MA 02720

-And the A&J 2000 Stringy Floppy $199.50, write for details, A&J Micro Drive, 1050 "I" East Duane Ave. Sunnyvale, CA 94086

-And the new disc drives can fit just about all of the above chines with the proper IF.

-To mention the disc drives from RAMEX and Aerco, see last March SINCUS NEWS.

When formatted each disc has 160K per side and as the drives are singlesided, the disc has to be turned over to access the other side. Of the 160K, 16K is taken up by the operating system and a further 4K by the directory leaving just 140K. On power up the operating system is transferred to memory in the controller leaving the Spectrum memory free.

...The Timex manual is very bad. The writer assumes a great deal of background knowledge about the system and therefore tells you what keys to press but not why you are pressing them.

...The microdrive keywords are also used so CAT# will display the current directory- current in that you can have eight levels and up to 15 directories. Similar files can be kept in seperate directories and directories can be kept in other directories.

The whole thing is arranged in the form of a tree. At the base, or root are the two RS22C channels and the names of all the discs in the drives. Each disc name can hold a number of different directories and files, each directory can hold further files and directories and so on up the tree.

As can be seen the directory structure is rather complex, possibly unnecessarily so on such a small machine with limited disc space. You can just use one level of directory which may make life easier.

The filing system offers two sorts of files. Both use the microdrive OPEN # and CLOSE # with the type defined using DIM. With the first sort strings are PRINTed to the file and can then be subsequently INPUT back into strings in the same sequence. The second sort is based on a record. That is a string of fixed length, up to 256 characters, which is PRINTed to the file as before. Up to a maximum of 65535 of such records can be sent too the file.

The system is supplied with a demo disc which contains, in addition to some simple BASIC programs, utilities to make backup copies, set an RS232 port to use LPRINT and LLIST, transmit and receive over the RS232 lines and dump a file to a printer in Hex.

The demo highlighted one of the problems with the system; because of the odd directory system it takes quite a time to discover how to load most of the programs. Once that is done it can be timed using the program:

```
10 FOR n = 1  TO 30
20 SAVE #"test"+STR$n CODE 32000,200
30 NEXT n
```

SAVEing was a little slow at 1.16 minutes while LOADing and ERASEing were slightly better than average at 19 seconds and, 23 seconds respectively.

All in all TIMEX has produced a good system capable of doing most of the things you need from a disc. All it needs now is to produce a manual which tells you how to use it.

Due to its complexities its price is high 269#- $269.95 in US plus 5% S&H and sales tax if any, but in theory, if you can change computers, all you would need to change would be the interface, which should be quite cheap. The ability to run C/PM may also be useful but TIMEX will have to supply programs converted for the system

The 3" disks used by the system are gaining popularity with home computer users (England) but, with the drop in microdrive cartridge price, they are expensive at 4-5 # a piece..."

We met for our regular meet on April 17 at the Chase/1st City Bank, and the hardware group meet on April 27, 1pm at the Vestal Public Library. Due to the late newsletter the attendance was light at the regular meeting and the turnout at the hardware meet was too few to justify tying up a meeting room at the library. Those who have been turning up for the hard/software meets will probably continue but at member's homes.

NOTE our next meeting locations

MAY 15:Microage Computers -downstairs meeting room-
106 Washington Ave,(next to theater),Endicott,NY

JUNE TO DECEMBER MEETS:

Vestal Public Library -TV room- 7pm 3RD Wednesdays

Gary Ennis got the meet off with apologies for the late newsletter and the annoucement of his new job with COMPUTER DOME at the Oakdale Mall. The May meeting will feature Ray Payne of KNIGHTED COMPUTERS from Fulton, NY, to demo the A&J Micro drives

Wes Brzozowski commented on TIMEX-Portugal has the "Silver Avenger" a 2068 like/Spectrum mixed breed- maybe the best of two worlds! He had a copy of "Your Spectrum", looks very good-you can charge it on Visa or MasterCharge or American Express-25 pounds : write to:

Your Spectrum Subs, 14 Rathbone Pl, London, W1P 1DE

lotsa good programs, worth the money!

Dave Schoenwetter and Clyde Tackley brought in their modems, computers and set up with the telephone for "live" demos of telecommunications with local BBS. A run thru on Dow Jones and Dave's program to keep from printing out page after page of carriage returns. It was a good demo and we all appreciated it. Thanks Clyde and Dave.

Welcome to new members: Ian Robertson, Islington, Ontario and Lester Oliver, Johnstown PA.

The Computer Shopper offer is still available-but this is the last time we'll mention it in this column-deadline is July 1. Great deal 6 mos. for $5. Send us a check made out "Computer Shopper" and we'll pass it on. Regular subscription rate is $15 a year. CS has a TIMEX Survival column.

I had this done earlier and probably better, but I SAVEd 2 copies without VERIFYing! The 2 seconds I saved cost me an hour to retype everything! The plug into the recorder mic had pulled out just a little bit and DRAT! I just ASSumed...

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SUM also has a user defined graphics article for the TS1000 achine, very interesting issue- if you are headed for Florida, several WILSON department store have the TS2068 for sale for $69 and some in package deals-but they don't ship! Headed for Tampa, Tallahasee, Jacksonville or Orlando ??

Triangle Sinclair Users' Group, Nov/Dec 84 issue just arrived!! They must be the only UG who needs a pop rivet to hold together their newsletter!! Thick and rich with info, good job all. I like the REAL PROGRAMMERS /dont drink light beer/ it has the potential for a TV series- so all the users can see "REAL Programmers", lota stuff in this issue- if you want the newsletter write Doug Dewey 206 James St. Carrboro, NC. 27510 and send $10 in check for 12 issues.

That's a wrap folks. See you at the next meet. Oh, I almost forgot to mention, last month I said my dear Dad never had nothin but a slide rule and a pencil, that was hardly mentioned n the newsletter, when I get a computer printout from him, a 256K, 2 DD, monochrome, IBM PC, printer et all and Mom hasn't seen him since...my wife says that sounds like it runs in the family.

Paul Hill
SINCUS

TIMEX TELEPHONE TRICKS & TIPS

By Dave Schoenwetter, SINCUS

This is the most recent list of the local free bulletin boards in the area. If anyone wishes to call long distance, the list is over 100 in New York alone.

NAME	SYSTEM	PHONE NUMBER	INTERESTS
OFA	IBM	754-3420	Upload/Download/message
CYBORG I	IBM PCjr	748-2554	Upload/Download/message
TCCS	IBM	785-2110	Upload/Download/message
CYGNUS	ATARI	729-5506	Upload/Download/message
TUBBS	TANDY	648-2366	Upload/Download/message
STTP	Commodore	722-0518	Messages
HSBBS	CO-CO	692-4857	Messages

These boards welcome responsible users with all types of system. Some will require a registration and call back to confirm users. All are menu driven and user friendly, however the TUBBS is the only board which will accomodate a 32 character screen width.

The list is expanding weekly, I will keep you updated on new boards and phone number changes.

AERCO PATCH Version 6 has been sent out to some folks for testing to see if the AUTODIALING is improved. Charlie Koeth said that he could see no difference, Gerry Knickerbocker's copy did not work at all and I have not heard from people to whom copies were mailed. At this point I really don't know if the problem is solved or not.

We are testing the procedure for transmitting TASWORD II files and hope to report that in a newsletter in the near future.

Dave Schoenwetter
SINCUS
1335 Farm to Market Road
Endwell, New York 13760

ADVERTISING RATES

SINCUS members may have a column ad up to 22 lines FREE!!! NOTE the advantage of buying a fulltime membership in SINCUS!!

ADVERTISING RATES

BUSINESS CARD SIZE	$ 3.00
QUARTER PAGE AD	$ 6.00
HALF PAGE AD	$ 10.00
FULL PAGE AD	$ 16.00

Circulation is 125 copies per month to Sinclair computer users, with only a dozen copies going to companies.

TS1000 Keyboard Addition

by Wes Brzozowski, SINCUS

Here's a nice beginner's project for owners of ZX-81s, TS 1000's and TS 1500's. Although numerous keyboard expansion articles have been published, all require opening the computer to get at five signals that don't go to the rear connector. This circuit uses a little extra hardware to produce five equivalent points, so the computer needn't be opened at all. It also contains provisions for future expansions.

Those expansions include the possiblity of adding a extra 8 keys, a keyboard beeper, and maybe an auto repeat function. Before anyone gets too excited, let me say that I haven't added all these extra options, and really don't expect to. I will, however, provide enough information for the "hardware types" out there to develop their own. Hopefully, they'll report back to us with their own improvements to this circuit. (Many are possible) Please understand that my own time is limited and I just can't pursue this circuit any further. Still, you can be assured that what I'll show has been debugged and works. It's possible to have a lot more TS1000 coverage in this newsletter, but you'll have to help us out by providing some. What I have started here is a fine opportunity for some of you to make your own contributions to T/S computerdom.

The next obvious question is "Will this work on my TS2068?" Sadly the answer is no. Although a rear edge connector keyboard expansion does APPEAR possible on a TS2068, it will require a completely different method, and may have a number of problems associated with it that will make it inconvient to use. The best I can say is to watch this space for future developments.

Construction of our circuit is fairly straight forward, though the key matrix may require a bit of explanation. Each key should have two contacts, which get connected together only when the key is pressed. All the keys in a horizontal row should be wired together at ONE of the two contacts. ALL the keys in a vertical column should be wired together at THE OTHER of the two contacts None of the horizontal wires should be connected to a point with a vertical wire. Pressing a key should connect together the two wires that intersect at its location. Got all that?

The circuity should be built on a small board mounted at the computer's rear connector. A short length of cable will stretch from this circuit board to the keyboard. Make sure the cable is clamped firmly in place at both ends. If solder is all that holds it on, wires will soon start breaking off.

It would be wise not to make this cable any longer than you'll need it to be. People who've wired their own keyboards to the insides of the computer have found to their dismay, that an excessively long cable will prevent the computer from working. In a similar manner, this circuit won't work if the cable is too long, although the computer will keep running. It's hard to say what "too long" really means. I've seen an early ZX-81 to which you couldn't attach more than 8-10 inches of wire, but most who wire keyboards inside their computers get away with 2 or 3 feet. Again, I expect this circuit to do likewise, with whatever your computer will tolerate.

Note that one of the inputs to the 7407 is just "flying in the breeze" with the notation "SEE TEXT". This is an extra buffer that's normally not used. It should be possible to extend the matrix with another column of keys which run to this buffer. This will give you 8 new keys to play with. The new 8 keys won't work from BASIC, though; you'll need your own machine code keyboard scanner to use them. (see "SYNTAX", Feb 1984, for an excellent tutorial on keyboard scanning.) A nice thing about this option is that if you've got extra keys on your keyboard, it'll cost no more than a little time and a little extra wire to hook them in.

A word on the 7407 buffer chip is in order. This device contains 6 buffers with OPEN COLLECTOR outputs. Be cautious about substituting in any other chip. For example, the 74LS244 buffers have TOTEM POLE outputs which won't work properly for what we're doing.

What about further expansion? If the inputs to a 74LS30 NAND gate are attached to the inputs of the 7407 buffers, a keypress detector can be made. The 74LS30 output will produce a series of very short pulses whenever a key is pressed. If these pulses are strected into a long pulse with a single-shot, they can be used to turn on an oscillator for a keyboard beeper.

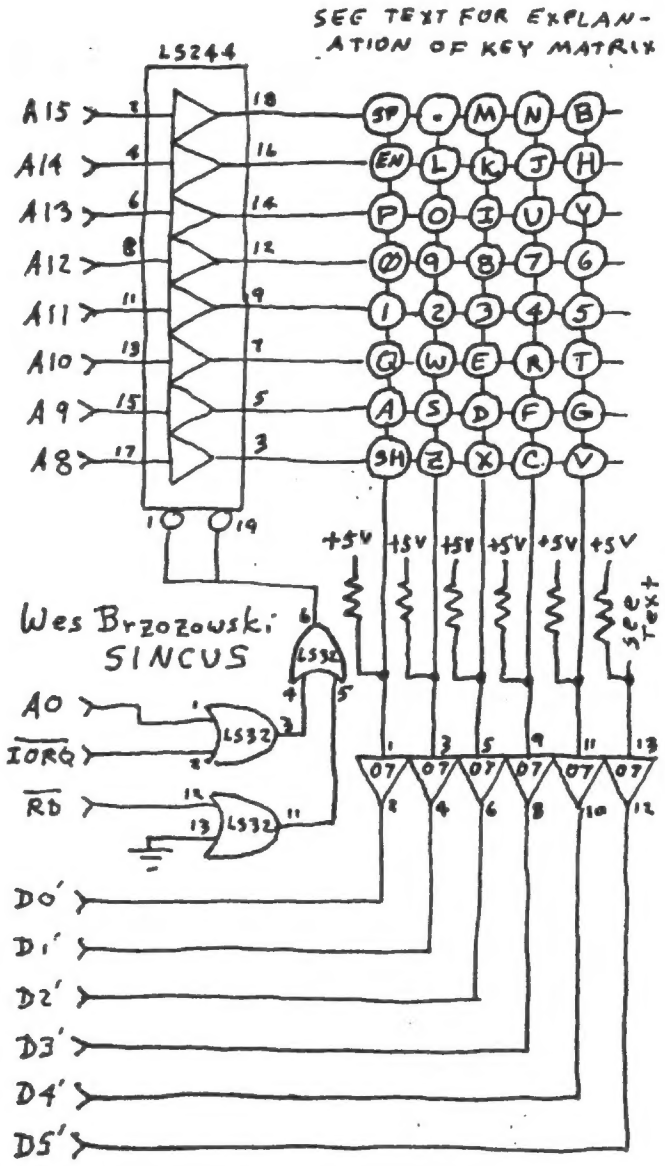
Pin 13 of the 74LS32 is connected to ground. If this point is disconnected and pulled high, the circuit will act as if no key were being pressed, whether or not one is. Since we can dete key press, we should be able to implement an auto-repeat function by switching this signal at a few hertz. Note that such a circuit will feed back on itself, making the timing somewhat tricly. I nevertheless have every confidence that some clever reader can pull it off.

As a bonus, the old membrane keyboard still works when this circuit is plugged in. The two keyboards will operate in parallell, and you're free to switch from one to the other. (The truly enthusiastic are welcome to try using both at once.)

In any case, a little examination will turn up all sorts of uses and possible modifications for this circuit. Have fun and don't forget to let us know of your results.

art work-TS1000 keyboard expansion

TS 1000 KEYBOARD EXPANSION



POWER CONNECTIONS:

	+5	GND
74LS244	20	10
74 07	14	7
74LS32	14	7

All Resistors are 2.2k

SINCUS DUES are DUE

regular membership $8.00

PLEASE MAIL IT IN IF YOU CANNOT MAKE THE MEETING IN SEPTEMBER!! SEND $8.00 TO

SINCUS
P.O. Box 36
JOHNSON CITY, NY 13790

UPDATES

by Wes Brzozowski, SINCUS

After I write the first draft of an article, I go through it, mercilessly scratching out phrases, sentences, and even paragraphs that aren't absolutely necessary. I do this so as not to take up too much space in the newsletter; others must also have the chance to speak their mind. While this occasionally obscures some minor point, I've never grossly changed the meaning of a statement... until last issue. Fortunately (for me) no one seems to have caught the error, as yet. Now, I'd like to quickly insert a correction to which I can point in my own defense, should someone send me a "nastygram".

In "Running Those Unrunnable Spectrum Programs", I may have inadvertently given the impression that any I/O device that does not check M1 will interfere with interrupt mode 2. This is not true. It is true that the I/O port must not put data on the bus unless M1 is high, but there's no way to do this. For example, if the port checks that RD is low before becoming active, everything will be fine, because there are no cases when RD, M1, and IORQ are all low together. Unfortunately, not all peripherals do this. I know of two such "design flaws"; one is obvious, and the other is quite subtle.

The obvious flaw occurs in a low cost input-only type peripheral that doesn't sample the RD line. (At least one Spectrum joystick interface does this.) This save on hardware, but carries with it the requirement that the port should only be read from; never written to. Since this scheme only samples IORQ and the address lines, it can be accidentally activated when an interrupt is serviced.

The second, not so obvious, flaw usually involves designs with programmable peripheral chips, like 8255 or the 6820. Those chips have a line called R/W, which is only used when the chip is enabled. In this case, it's pulled high to read from the chip and pulled low to write to it. It's often attached to the Z80 WR signal, under the assumption that if its enabled and not being written TO, it MUST be being read FROM. The problem occurs when the chip is enabled using IORQ and the address lines, but not M1. In this case, an interrupt service can enable the chip to put something on the data bus. Then it's bye-bye program. As such, if R/W on the chip is attached to WR on the Z80, then the chip enabling must only be active when M1 is high.

Interestingly enough, the Z80-PIO, a programmable peripheral chip designed by the same folks who gave us the Z80 microproceesor, is set up so it's impossible to commit this error. I guess it pays to "stick with the same brand".

Anyone who's followed this line of reasoning to the end is likely to agree that attempts to simplify it just invite disaster. I'm glad for the opportunity to set things straight.

Computus Interruptus, Part 4

-Or, the Joy of Using the Interrupts on Your Computer

by Wes Brzozowski, SINCUS

As mentioned last time, the interrupt driven print-screen program we've been playing with is just about "all used up", as a learning tool. Its main advantage was that it was very short, and could be easily entered. Unfortunately, it required a TS2040 printer to operate.

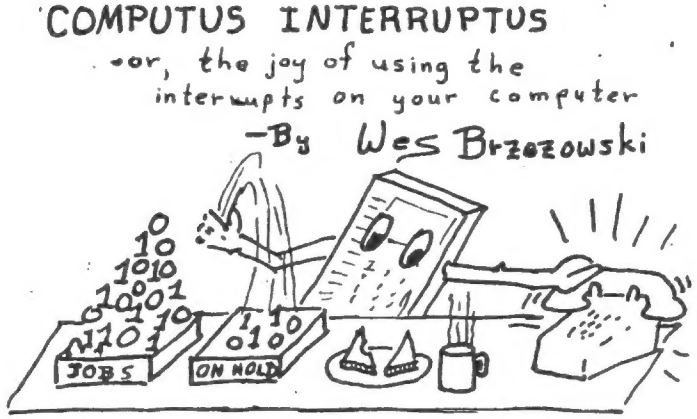
Starting with this installment, we'll learn some new things by working with an interrupt driven sprite program. It's more work to enter, but it's fun to watch, and anyone with a TS2068 can try it.

Let's define some terms. A sprite is a graphic "object" that we place on the screen, with a given location, direction and speed, and then just 'let it go'. It will then move on its own. True sprites require special display hardware. We can simulate this in software, and still retain most of the abilities normally associated with sprites.

The BASIC program given is all you need to send a happy little sprite bouncing merrily around your screen. Because he's interrupt driven (in programmer's lingo, he's operating "in the background"), you can type in, LIST, or RUN your own programs without disturbing him. He'll just keep bouncing, because you normally run BASIC and machine code in the "foreground". Note that the terms foreground and background have a somewhat wider range of meaning on certain certain computer systems;these are of no interest to us here.

Computer syetems may be said to have different programs running simultaneously in the foreground and background. If we want to get extremely picky, we can point out that most computers can only do one thing at a time. The running of the foreground is periodically put "on hold" (suspended)in order to run the background program. This is just another way of saying that the system has processed an interrupt.

This description should not be confused with multitasking. In such a case, the program being multitasked might be in the foreground, while a background program allows portions of each to be run;either in rotation or according to some priority scheme.



This wouldn't cause two BASIC programs to run faster together the constant switching around should actually make them run slower. The advantage comes from the fact that computers often use up a lot of time just waiting...for you to press a key,for a printer to print a character, etc. A multitasking system allows that wasted time to be used by someelse. The rather limited market for this facility in a home computer explains why it's not usually implemented on smaller systemslike ours, although it could probably be done.

Although concepts like multitasking may be of limited use in our machines, concepts like foreground and background are not. For example, all Timex and Sinclair machines (though I'm not sure about the QL) scan the keyboard in the background. Because of this, even machine code programmers can skip the lengthy scanning process needed to read the keyboard. Certain memory locations will already conatin a running account of which key is being pressed, almost as if by magic.But it's not magic; it's being done invisibly for you in the background.

Defining those terms, and hopefully grasping those ideas, will help us to understand how are little sprites can stay so busy on the screen while there's "obviously" no program running, or while we're already running something completely different. It will also help us to understand why certain actions on our part can cause the sprite to "rest" for awhile. Understanding these things shows us that the little computer normally do a lot more than we think!

I apologise for the length of the program; the DATA statements are no fun to type and check. Please be assured that the program is just about a short as it can be and still work This limits our ability to change it, though its highly modular and only certain portions need be rewritten to expand it. We'll cover these in the future.

This program works on a "plain vanilla" TS2068, or with a Spectrum emulator, and doesn't need the pullup resistors we've discussed in the past. After entering the program, use line 9999 to SAVE it to tape, and then RUN it. (Also, look closely at line 9999, and note what happens when you LOAD the program back. This is not a overly useful, but, er...flashy little trick.)

After the program RUNs, the sprite program will have bee entered into memory, but it wont start the sprite yet. If you get the message "Checksum Error", then you made an error in entering the DATA statements. Recheck them and try again. If all goes well, you may NEW the program if you wish.

To start the sprite, type in RAND USR 64776. To stop it and make it vanish, type in POKE 64898,1 . While the sprite is moveing around, you still have control over the computer to enter and RUN a program. The sprite doesn't care, he's running in the background.

Some BASIC commands like BEEP, COPY or SAVE will disable the interrupt and cause the sprite to stop for a short time. T is because each of these commands require the computer to produce a precisely timed series of pulses. In order to cut costs, these pulses are timed by software delay loops. Any interrupt would change this timing, so the interrupt is diabled while they're running. The presence of our happy sprite allows us to "see" a disabled interrupt.

I should point out that some BASIC commands can cause strange things to happen. In order to keep the program simple, the sprite routine assumes that all screen commands operate on ingle characters (commands like PRINT or LIST). Other commands that work one pixel at a time, (like PLOT or CIRCLE) or full screen operations, (like CLS or screen scrolling) can cause stationary bits of sprite to be left around the screen. These problems may be avoided if you shut off the sprite before doing these commands, and turn it on again, after you've done them. The sprite will then continue where it left off.

Besides being interesting to play with, the program can give you a better "feel" for the basic principle of interrupts than mere reading can. Owners of a disassembler like HOT Z-2068 won't have much difficulty figuring out the code. For those content to wait, we'll talk all about it, next time.

The following T/S Programs

The following T/S Programs Will RUN when in the ZX SPECTRUM MODE

FLIGHT SIMULATION

Thanks to CAREL MORRIS

Interrupt Driven Sprite Program

By Wes Brzozowski, SINCUS

```
  10 REM Sprite Demonstrator
  20 REM Enable Sprite With
       RAND   USR 64776
  30 REM Disable Sprite With
       POKE 64896,1
  35 CLEAR 64767
  40 FOR j=65024 TO 65280: POKE
j,253: NEXT j
  50 POKE 65021,195: POKE 65022,
27: POKE 65023,253
  90 LET checksum=0
 100 RESTORE 1000
 110 FOR j=64776 TO 64992
 120 READ dat: LET checksum=chec
ksum+dat
 130 POKE j,dat
 140 NEXT j
 150 IF checksum<>30092 THEN CLS
 : PRINT "Checksum Error!!!!!!!"
: STOP
1000 DATA 243,237,94,62,254,237,
71,175,50,130
1010 DATA 253,205,211,253,205,64
,253,251,201,245
1020 DATA 197,213,229,205,139,25
3,58,130,253,167
1030 DATA 32,16,205,78,253,205,2
11,253,205,64
1040 DATA 253,225,209,193,241,19
5,56,0,237,86
1050 DATA 225,209,193,241,251,20
1,1,131,253,237
1060 DATA 91,126,253,205,165,253
,205,180,253,201
1070 DATA 237,91,126,253,237,75,
128,253,62,31
1080 DATA 187,32,2,14,255,175,18
7,32,2,14
1090 DATA 1,186,32,2,6,1,62,23,1
86,32
1100 DATA 2,6,255,237,67,128,253
,123,129,95
1110 DATA 122,128,87,237,83,126,
253,201,10,10
1120 DATA 1,255,0,60,66,165,129,
165,153,66
1130 DATA 60,237,91,126,253,205,
165,253,229,1
1140 DATA 131,253,205,200,253,32
,8,225,1,0
1150 DATA 253,205,180,253,201,22
5,201,122,230,7
1160 DATA 15,15,15,179,111,122,2
30,24,246,64
1170 DATA 103,201,22,8,10,119,36
,3,21,32
1180 DATA 249,201,22,8,126,36,2,
3,21,32
1190 DATA 249,201,22,8,10,3,190,
192,36,21
1200 DATA 32,248,201,237,91,126,
253,205,165,253
1210 DATA 1,0,253,205,190,253,20
1
9998 STOP
9999 SAVE CHR$ 18+CHR$ 1+"Sprite
"+CHR$ 18+CHR$ 0 LINE 10
```

OVERCOME COMPUTINGPHOBIA.

(or How You Too Can Learn To Live With The Computer)

by Gary Ennis
@ 2K EXPRESS, SINCUS

The source of the quotation escapes me, but the number is indelible in my mind - "In a recent study 42% of those interviewed did not own a computer, because they didn't like them!" This feeling is visible every time Phil Donahue does one of his hand clapping audience surveys on the question "How many like computers and want to use them?" Inevitably, the majority clap louder meaning a resounding "NO"! Why does this feeling exist?

The computer industry can be blamed for much of this public attitude. Some of the companies have been responsible for the biggest technological breakthroughs in history, yet they do not communicate the "power" of the computer very well. Add to this the perplexing advertising campaigns that are based on "You've GOT to have a computer or you'll fail in life" leaves people intimidated. Most of us don't understand how this "black box" does such marvelous things. The industry doesn't have to give us a detailed accounting of how the computer works any more than the auto industry has to explain how a carburetor works in order for us to drive a car! But the great mysteries of the "black box" have to be minimized!

The industry (to include most "expert computer users") then set out to make us "computer literate" and everything "user friendly". More than just a few new terms, "computerese" is now a new language, often spoken only by "insiders" who still think we know how the "black box" works!

The "power" of the computer leads people to another conclusion-that it is fragile. Watch a first time "computerer" touch a keyboard. They are very tentative and think if they press the wrong key the whole thing may blow up, or worse yet they will accidentally activate the Defense Department ala Matthew Broderick in the recent movie "War Games". When they inevitably do press the wrong key, causing some innocent but unexpected thing to happen like changing the screen they -using appropriate learning mechanisms- reinforce their preconception that this very complicated equipment must be hard to learn to use. They do not take the attitude they had when they learned to swim or ride a bike, namely that mistakes were inevitable and could be avoided with a little practice. The "power" of the computer misleads people into thinking the machine can TEACH you since it is "smart". In fact, ask even occasional computer users if they are smarter than the computer and they will almost always say "No". They do not hold this attitude about their pocket calculator or digital watch which use the same technology, nor would they feel that way about an early "data processing "device"-the player piano.

To all of these factors we must add the multi-million dollar advertising campaigns that still fail to point out the things we can use the computer for. If they put one on your desk they expect it will make you a more productive worker. If you bring one home, how can it make life easier, more fun, or you more productive?

First, we have to admit we are entering a learning process and we will not become expert overnight, but we CAN become proficient if we will simply try. Next, we must learn we cannot hurt the thing if we only type on it, and we will not activiate some unstoppable doomsday device by pressing the wrong key. We may well be faced with occasionally overcoming the poorly written "users manuals".

If you don't balance your checkbook, a computer is not going to change that! BUT, if you start a budget every year and about March 1 just give up on it because you are overwhelmed with the numbers, then a computer can make life easier. It also is one of the most effective tools in learning new things and a real tool in communicating-be it using your telephone lines to reach other "friendly black boxes" or using a "word processor" to help communicate the written word. (Word processing uses computer "power" to help you write more easily and knows that carbUrEtor is correct!"). Additionally, it can help you find recipes or Aunt Milly's address or keep an inventory of the household contents for your insurance company or keep track of the maintenance schedule of the fleet of family vehicles. It is a source of entertainment. You can "fly" a flight simulator or replay the "Bobbie and Boris" chess matches or solve the mysteries of the pirate's cave and find the lost treasure-all good mental exercise!

CAREERS magazine, (April 1985) quotes International Data Corporation (IDC), a market research firm covering the information industry, as reporting:

> "Learning to use a personal computer will be a very common expectation, if not a rite of passage soon, much as learning to drive a car is for the great majority f Americans." #

Add the intimidation of "We are going to learn to use them or we will learn to sweep around them!" and you see the dilemma.

"Computer literacy" will come to pass as the children are introduced to the computer before they have a chance to get "computingphobia"! The adult, however, should not surrender to this new tool. You can easily learn to use it to make your life easier if you will but try. Be patient, work at it, and when you have become an experienced user, don't speak of Ram, ROM, K, bits, bytes, and other buzzwords- help the next person to have an easier time learning to use the mysterious "power" of the black box.

GARY ENNIS
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Owego, New York 13790

TIMEXLY TIPS

TS1000 WITH NEW ROM

```
TRY THIS. SHOW IT TO THE
      TS 1000/1500 SINCUS GROUP
QQQ VVV WWWW UU OO KKK'''',,,

ALSO TRY POKE 16389,255 ENTER  N
EW
DIM A$(45000)
LET A$(45000)=1
PRINT A$(45000)
YOU ARE READY FOR A BIG  ZX/PRO-
FILE NOW
1
0.1
.01
.001
.0001
.00001
1E-6
1E-7
1E-8
1E-9
  10 PRINT ,,,,"TRY THIS. SHOW I
T TO THE                TS 1000/15
00 SINCUS GROUP"
  11 LPRINT ,,,,"TRY THIS. SHOW
IT TO THE                 TS 1000/1
500 SINCUS GROUP"
  12 SLOW
  14 LPRINT "QQQ VVV WWWW UU OO
KK'''',,,"ALSO TRY POKE 16389,
255 ENTER  NEW",,"DIM A$(45000)"
  15 LPRINT "LET A$(45000)=1   ",
"PRINT A$(45000)"
  16 LPRINT "YOU ARE READY FOR A
 BIG  ZX/PRO-FILE NOW"
  19 LET X=10
  20 FOR I=1 TO 10
  30 LET X=X/10
  40 PRINT X
  50 LPRINT X
  60 NEXT I
  69 PRINT " INPUT ANY KEY"
  70 PAUSE 4E4
  80 CLS
  90 FOR J=1 TO 10
 100 FOR I=1 TO 22
 110 PRINT "[redacted]
[redacted]"
 120 NEXT I
 130 FOR I=1 TO 22
 140 SCROLL
 150 PRINT "[redacted]"
 160 NEXT I
 170 CLS
 180 NEXT J
 200 LLIST 10
```

THE NEW 8K BASIC UPGRADE

```
THIS PROGRAM

  10 LPRINT "THIS PROGRAM",,,,
  20 LLIST
  30 LPRINT "PRINTS OUT THE CHAR
ACTER.",,,,
  40 LPRINT "NOW RUN BOTH PROGRA
MS ON YOUR     "
  50 LPRINT "TS1000/1500 OR ZX81
"
  60 FOR N=0 TO 255
  70 LPRINT CHR$ N;
  80 NEXT N
PRINTS OUT THE CHARACTER.

NOW RUN BOTH PROGRAMS ON YOUR
TS1000/1500 OR ZX81
 "#$:?()><=+-*/;,.0123
456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
RNDINKEY$PI????????????????????
????????????????????????????????
????????[redacted]
[redacted]
STUVWXYZ"AT TAB ?CODE VAL LEN SI
N COS TAN ASN ACS ATN LN EXP INT
 SQR SGN ABS PEEK USR STR$ CHR$
NOT ** OR AND <=><> THEN TO STE
P LPRINT LLIST STOP SLOW FAST NE
W SCROLL CONT DIM REM FOR GOTO G
OSUB INPUT LOAD LIST LET PAUSE N
EXT POKE PRINT PLOT RUN SAVE RAN
D IF CLS UNPLOT CLEAR RETURN COP
Y
```

```
THIS PROGRAM

PRINTS OUT THE CHARACTER.

NOW RUN BOTH PROGRAMS ON YOUR
TS1000/1500 OR ZX81
 "#$:?()><=+-*/;,.0123
456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
RNDINKEY$PI????????????????????
????????????????????????????????
????????[redacted]
[redacted]
STUVWXYZ"AT TAB ?CODE VAL LEN SI
N COS TAN ASN ACS ATN LN EXP INT
 SQR SGN ABS PEEK USR STR$ CHR$
NOT ** OR AND <=><> THEN TO STE
P LPRINT LLIST STOP SLOW FAST NE
W SCROLL CONT DIM REM FOR GOTO G
OSUB INPUT LOAD LIST LET PAUSE N
EXT POKE PRINT PLOT RUN SAVE RAN
D IF CLS UNPLOT CLEAR RETURN COP
Y
```